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ABSTRACT

The study examined whether an animal naming task would discriminate between 286 normal students (grades K-9) and 123 language disordered students (5-16 years old). The task was of a free and controlled association type for identifying word retrieval problems. Each subject (S) was administered the task individually in the school or clinic setting. The mean number of responses were computed across grades for both groups. Steady increments in scores were found for both groups through the fifth grade. Normal language Ss produced more animal names than their language disordered grademates in 8 of the 10 grades, although differences were not significant at any grade level. It is concluded that three aspects of lexical accessibility need to be explored to gain insight into the results: word frequency, codability, and age of acquisition. (CL)

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1985 ASHA Convention, Washington, D.C.

Can Controlled Association Tasks Identify Word-Finding Problems in Children?

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INTRODUCTION

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Word-finding problems are often exhibited by children with language or learning problems. As a profession, speech-language pathologists seem to be increasingly aware of this aspect of communication disorders in children. The authors' work with language disordered children dictated a need for a reliable method to identify children with word-finding problems, preferably a tool that could be used in a language screening context.

The literature describes five different techniques which claim to assess word-retrieval skills. They are 1) observations of conversational speech, 2) observations of seriatum speech, 3) a pair of tasks called the "auditory" conditions, 4) confrontation naming and it's offspring called Rapid Automatized Naming, and finally 5) free and controlled associations. I'd like to briefly describe each technique.

Observations of conversational speech is a technique in which spontaneous speech is observed for evidence of word-finding problems. Johnson and Myklebust advocated its use in their 1967 text on learning disabilities. The Boston Diagnostic Aphasia Examination includes a Word-Finding Scale which allows a clinical decision about whether word-finding is a significant part of an aphasic's speech pattern. Most recently, Wiig and Semel have attempted to formalize observations by specifying rules for analyzing a language sample which then lead to both qualitative and quantitative information.

Observations of seriatim speech is a clinical technique in which the ability to rapidly name automatic sequential series of words is analyzed. Stimuli have included counting to 20 or 21, and listing items, such as the alphabet, days of the week, and months of the year. Subtests using seriatum tasks are included in the Eisenson Aphasia Test, Schuell's Minnesota Test for Differential Diagnosis of Aphasia, the Boston, the Stanford-Binet Intelligence Scale, and the CELF.

The third assessment technique, the "auditory" conditions, was developed in 1969 by Barton, et al. The technique requires the completion of two tasks, the word needed to complete an open-ended sentence, and the naming of the word implied by a description. Several subsequent researchers have used the technique experimentally, but we have found no reports of clinical applications of the technique.

Confrontation Naming is the fourth assessment technique, a technique which was used initially with children by Rutherford and Telser in 1967. The task involves the naming of common pictures or objects as soon as possible after the stimulus item is shown to the subject. It has appeared in numerous test instruments including Schuell's MTDDA, the PICA, the Spreen-Benton Aphasia Tests, the Boston, the Western Aphasia Battery, the PICAC, and the CELF. An offspring of Confrontation Naming, called Rapid Automatized Naming, or RAN, appeared in 1974 and involves the repeated presentations and naming of a very limited number of stimuli. RAN was initially reported by Denckla and Rudel and has been used in a limited number of studies since that time.

The fifth technique is Free and Controlled Associations, which requires spontaneous generation of words within specific time periods. Tests incorporating this procedure are the Detroit Tests of Learning Aptitude, the

Spreen-Benton Aphasia Tests, the Boston, the McCarthy Scales of Children's Abilities, the Stanford-Binet, the Western Aphasia Battery, and the CELF.

Of the five techniques described, a Free or Controlled Association task seemed the best suited for inclusion in a screening battery since the task is of short duration, simple to administer, simple to score and requires a minimal number of test materials. But, the four published tests using the technique with children also seemed to present problems, such as dated norms, norms covering a restricted age range, the citation of only a single passing criteria, and psychometric difficulties.

However, a subtest in the Boston Diagnostic Aphasia Examination seemed to hold some promise as a screening instrument for identifying word-finding problems in school-age children. This was the Fluency in Controlled Association, or Animal-Naming, subtest. The test manual stated that the naming of 12 animals was the norm for 10-year old children on the subtest. The method by which this norm was obtained isn't shared in the manual, but it seemed to indicate that the task could be used with children.

METHODS

The Animal-Naming task is a simple one. We adapted the language of the instructions to fit children as follows: "I want to see how many different animals you can think of and name for about a minute while I count them. Any animals will do; they can be from the farm, the jungle, the ocean or be house pets. For instance you can start with dog." The responses are then recorded, verbatim, in six 15-second segments.

We dealt with two groups of subjects for our study attempting to develop normative information on this tool for identifying word-finding problems in school-age children. The larger group of subjects consisted of 286 normal

children in grades kindergarten through nine, living in either of two Iowa communities. The children were identified by building principals and classroom teachers as meeting the following criteria:

- 1) doing at least average academic work
- 2) having no history of communication problems, and
- 3) having no history of remedial assistance for academic problems.

The second group of subjects were 123 language-disordered children ranging in ages from 5 through 16 years of age. The subjects had met the criteria of:

- 1) normal hearing
- 2) performance intelligence quotient of 80 or above, and
- 3) a Language Severity Rating of L2, L3, or L4 on a minimum of two formal, normed language measures. This measure was developed by the Iowa Department of Public Instruction, and describes language delays from 6 to 18 or more months.

These subjects were identified by speech-language pathologists working in the schools of the local Area Education Agency, or in two clinic facilities at the University of Iowa.

Each subject was administered the Animal-Naming task individually, either in the school or the clinic setting. Administration time, including the instructions, took a total of approximately 2 1/2 minutes. When scoring the test protocols, we chose to follow the scoring conventions developed by Goodglass and Kaplan for the Boston Diagnostic Aphasia Examination. This consists of computing the number of responses produced during the most productive consecutive 60-seconds.

RESULTS

The mean number of responses were then computed across grades for both the normal language learning and the language-disordered subject groups. As can be seen in the graph, steady increments in scores were seen for both groups through the fifth grade. The normal language learners produced more animal names than did their language disordered grademates in 8 of the 10 grades, although the differences were not statistically significant between the two groups at any grade level.

The overlay illustrates the first standard deviations.

The normal subjects in this study performed at a higher level than the performance of children mentioned by Goodglass and Kaplan. The 12 items they cite as a norm for 10 year old children was typical of children in the first grade (6-7 year olds) in this study.

The Animal-Naming subtest was reported by Goodglass and Kaplan to identify word-finding problems in the adult aphasic population. Thus, it seemed important to validate this assumption in a population of language-disordered children by administering the task to children with known word-finding problems. The school or referring clinician of each of the 123 language disordered subjects was asked specifically if the child exhibited word-finding problems, based on their observations and interactions with that individual child. 16 of the language disordered children were so described. We then compared the performances of these 16 children to the mean score achieved by the normal group for their grade level. 7 of the language disordered children were below their grade mean, one was at the mean, and 8 were above the mean achieved by their normal grade-mates.

DISCUSSION

Can controlled association tasks identify word-finding problems in children? This study has shown that it does not, when using the category of animals as stimuli. Three parameters of lexical accessibility need to be explored to gain some insights into possible explanations for the results obtained in this study. These three parameters are Word Frequency, Codability, and Age of Acquisition.

Butterfield and Butterfield hypothesized that word frequency influenced an individual's vocabulary and meaning structure since they reflect what one hears in one's linguistic environment. Thus the frequently mentioned words and concepts are the ones most likely to be retrieved and used by the individual. Word frequency also is a factor in associative clustering which facilitates recall as found by Bousfield, Cohen and Whitmarsh.

Perhaps the category of animals contains enough high frequency words that it does not allow for clear differentiation of children with word-finding problems. Also, children's experiences with animal names in preschool and early elementary educational settings actively teaches thinking of animals as an associative cluster. As a result, our findings may reflect only the development of the associative cluster for the category of animals, and may not reflect word-retrieval in areas that have not been formally taught. Perhaps the task needs to be investigated using other categories.

Codability is the second parameter which needs to be considered when interpreting the results of this study. Codability is a sociolinguistic term used by Lachman, explaining why the labels given to stimuli by persons living in a particular language community are agreed upon. The more important words are

more highly agreed upon, used more frequently, acquired at an earlier age, and thus were more readily available for recall.

Codability may be a factor in this study because all subjects were from Iowa. Children raised in Iowa, whether developing language skills normally or not, and whether living in a rural or urban area, are frequently exposed to animals outside of the classroom. This exposure may be direct, by actual observation of animals or indirect via radio, TV, newspaper, and family discussions of the economics of agriculture. Perhaps this ready availability of animals in the immediate environment heightens childrens' awareness of, and interest in, all types of animals. Perhaps this study should be replicated in a non-agricultural urban area of the country.

The age at which a word is acquired is the third parameter which may affect lexical accessibility. Carroll and White stated that high frequency words are ones acquired at a young age. The longer the word is in long-term memory the more accessible it is for recall. For reasons already discussed, animal names are probably words which are acquired early in life for children living in Iowa, and thus were accessible for recall when the child was confronted with the task of naming animals.

Can controlled association tasks identify word-finding problems in children? The jury is still out on this issue. However, our study has demonstrated that the task using the category of animals does not differentiate language-disordered Iowa children from their normal language learning grademates.

**1. OBSERVATION
OF
CONVERSATIONAL
SPEECH**

**2. OBSERVATION
OF
SERIATED SPEECH**

**3. AUDITORY
CONDITIONS**

**1. OBSERVATION
OF
CONVERSATIONAL
SPEECH**

**2. OBSERVATION
OF
SERIATUM
SPEECH**

**3. "AUDITORY"
CONDITIONS**

**4. CONFRONTATION
NAMING**

**(RAPID AUTOMIZED
NAMING-RAN)**

**5. FREE
AND
CONTROLLED
ASSOCIATIONS**

**CRITERIA
NORMAL SUBJECTS
(N=286)**

**1. AVERAGE OR
BETTER
ACADEMIC WORK**

**2. NO HISTORY
OF
COMMUNICATION
PROBLEMS**

**CRITERIA
NORMAL SUBJECTS
(N=286)**

**3. NO HISTORY OF
REMEDIAL
ASSISTANCE
FOR
ACADEMIC
PROBLEMS**

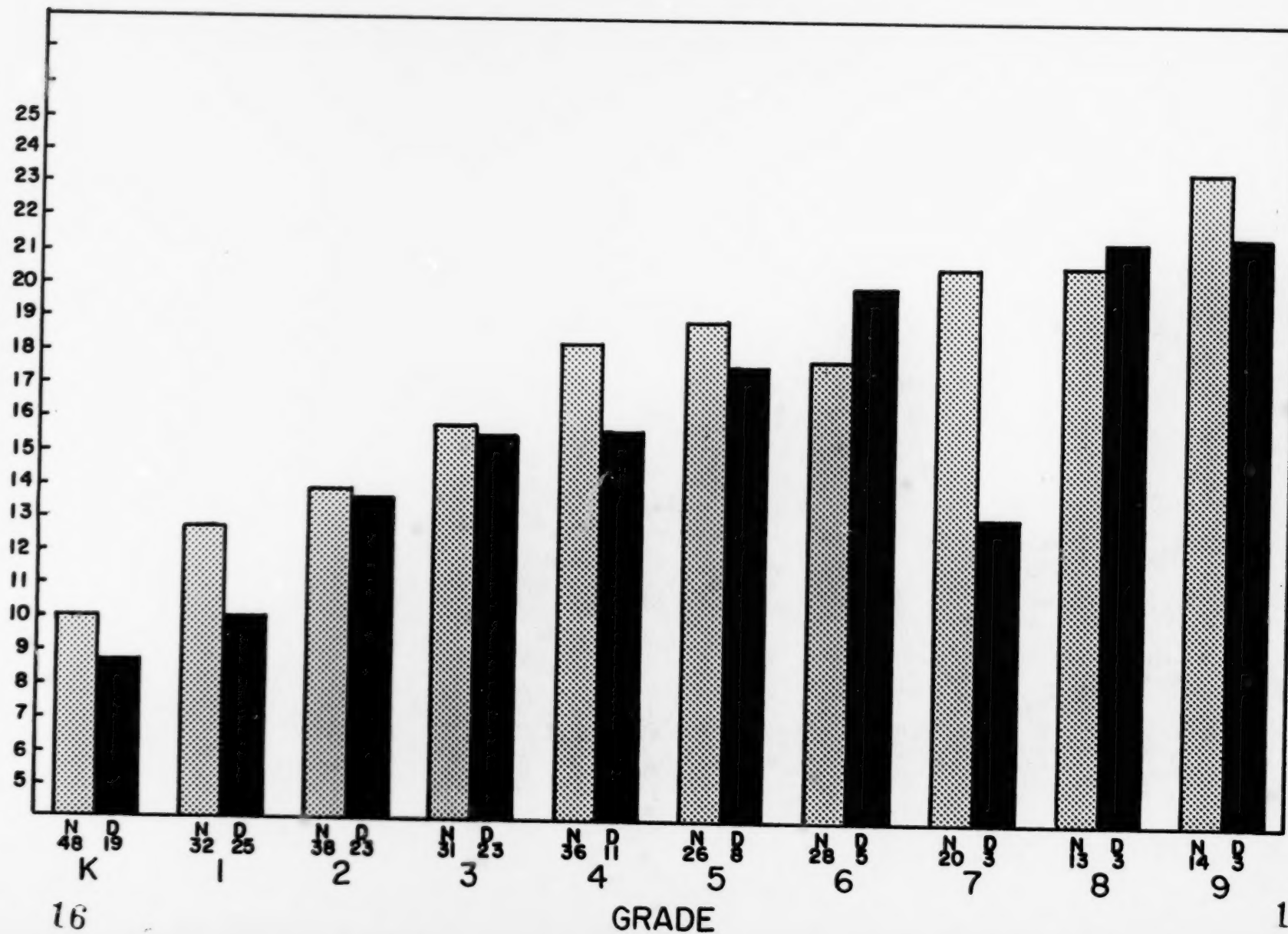
**CRITERIA
LANGUAGE
DISORDERED
SUBJECTS
(N=123)**

- 1. NORMAL
HEARING**
- 2. PERFORMANCE
I.Q. OF
80 OR ABOVE**

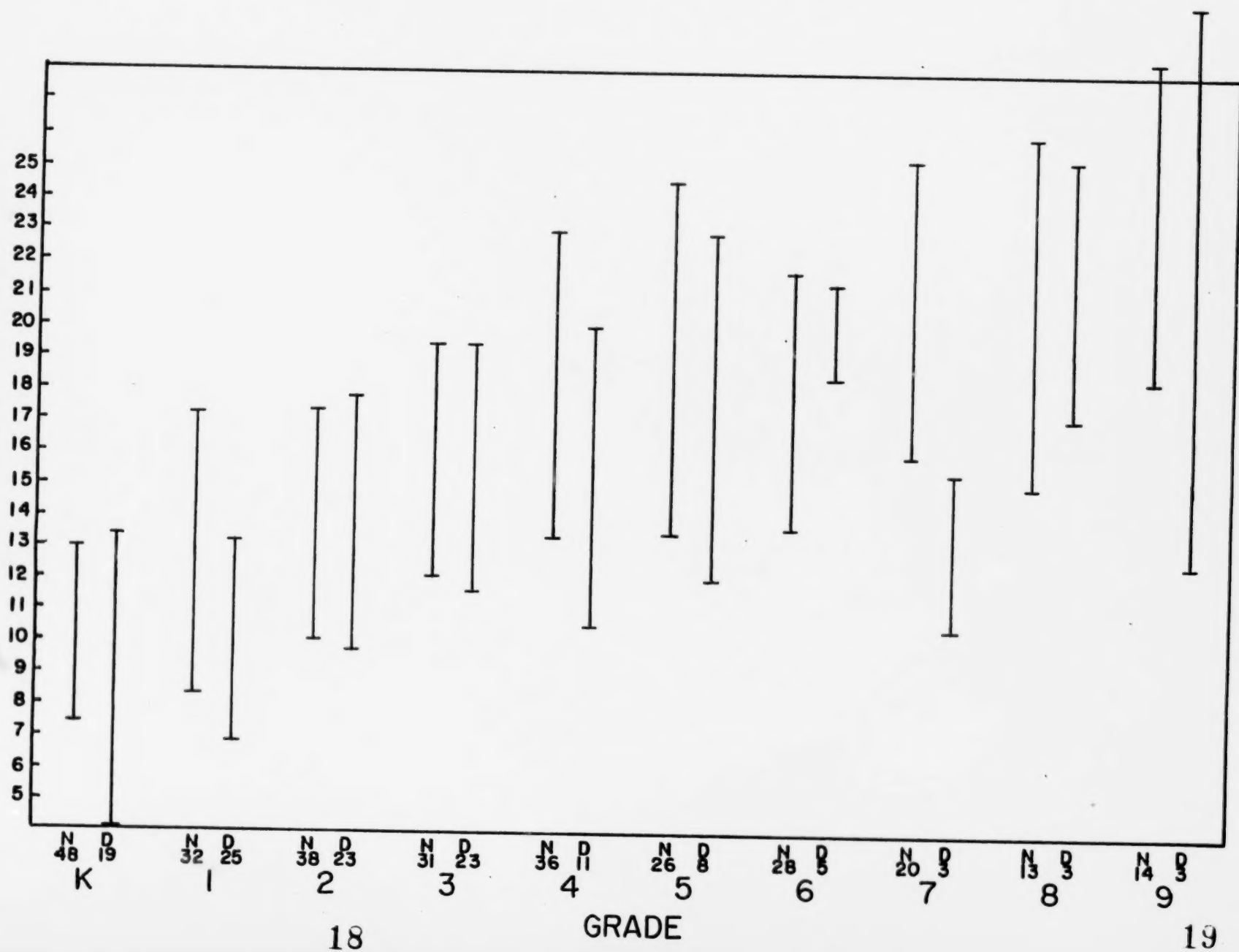
**CRITERIA
LANGUAGE
DISORDERED
SUBJECTS
(N=123)**

**3. LANGUAGE
SEVERITY RATING
OF
L2, L3, OR L4**

Mean Number of Animal-Name Responses During
Most Productive 60 Seconds



Mean Number of Animal-Name Responses During
Most Productive 60 Seconds



**WORD
FREQUENCY**

CODABILITY

**AGE OF
AQUISITION**